

IN THE CLAIMS

1. (currently amended) An apparatus for producing DLC (diamond-like carbon) film-coated plastics containers having a top, a body portion, a bottom portion and a shoulder portion wherein the shoulder portion is located above the body portion, which comprises an outer electrode unit adapted to be disposed outside the a plastic container, an inner electrode disposed inside ~~the~~ said plastic container, a ~~degassing vacuum~~ unit for reducing the inner pressure ~~of the~~ in said plastic container, a gas feeding unit for feeding a raw material gas of a carbon source into ~~the~~ said plastic container having been degassed by the degassing which has been placed under a vacuum by said vacuum unit, and a power source unit for applying a voltage between the outer electrode unit and the inner electrode ~~with~~ while a carbon source gas is being fed into the container, ~~thereby to generate where a plasma is generated~~ to form a DLC film on ~~the~~ an inner surface of the plastic container; wherein the outer electrode unit comprises a first outer electrode disposed along the bottom portion of the plastic container, and a second outer electrode disposed along the body portion of the plastic container, and the upper edge of the first outer electrode is positioned below the center of the plastic container between the top portion and the bottom of the plastic container, and insulator or resistive or capacitive elements are interposed between the first outer electrode and the second outer electrode, and an output terminal of a high frequency oscillator is connected to the first outer electrode via a matching transformer.

2. (canceled)

3. (currently amended) The apparatus for producing DLC film-coated plastic containers as claimed in claim 1 ~~or 2~~, wherein

the outer electrode unit is provided with a third outer electrode disposed along the shoulder portion of the plastic container.

4. (currently amended) An apparatus for producing DLC film-coated plastic containers having a top, a body portion, a bottom portion and a shoulder portion which is located above the body portion, which comprises said apparatus comprising an outer electrode unit disposed outside a plastic container, an inner electrode disposed inside ~~the~~ said plastic container, a ~~degassing~~ vacuum unit for reducing the inner pressure of the plastic container, a gas feeding unit for feeding a raw material gas of a carbon source into ~~the~~ said plastic container ~~having been degassed by the degassing which has been placed under a vacuum by said vacuum the plastic container having been degassed by the degassing unit,~~ and a power source unit for applying a voltage between the outer electrode unit and the inner electrode ~~with~~ while a carbon source gas is ~~being~~ fed into the container, thereby to form a DLC film on ~~the~~ an inner surface of the plastic container; wherein the outer electrode unit comprises a first outer electrode disposed along the bottom portion of the plastic container, a second outer electrode disposed along the body portion of the plastic container, and a third outer electrode disposed along the shoulder portion of the plastic container, and an insulator or resistive or capacitive elements are interposed between the first outer electrode and the second outer electrode, and an output terminal of a high frequency oscillator is connected to the first outer electrode via a matching transformer.

5. (currently amended) An apparatus for producing DLC film-coated plastic containers having a top, a body portion, a bottom portion and a shoulder portion which is located above the body portion, which comprises said apparatus comprising an

outer electrode unit disposed outside a plastic container, an inner electrode disposed inside the plastic container, a ~~degassing~~ vacuum unit for reducing the inner pressure of the plastic container, a gas feeding unit for feeding a raw material gas of a carbon source into the plastic container ~~having been degassed by the degassing which has been placed under a vacuum by said vacuum the plastic container having been degassed by the degassing~~ unit, and a power source unit for applying a voltage between the outer electrode unit and the inner electrode ~~with~~ while a carbon source gas is being fed into the container, thereby to generate plasma to form a DLC film on ~~the~~ an inner surface of the plastic container; wherein the outer electrode unit comprises a first outer electrode disposed along the bottom portion of the plastic container, a second outer electrode disposed above the first outer electrode and ~~along the outer periphery~~ outside of the plastic container, and at least two other outer electrodes disposed above the second outer electrode and ~~along the outer periphery~~ outside of the plastic container. and an insulator or resistive or capacitive elements are interposed between each of the outer electrodes, and an output terminal of a high frequency oscillator is connected to the first outer electrode via a matching transformer.

6. (canceled)

7. (currently amended) A method for producing DLC film-coated plastic containers, which comprises disposing a first outer electrode outside a plastic container along the bottom of the plastic container and in such a manner that the upper edge of the first outer electrode is positioned below the center between the top and the bottom of the plastic container, disposing a second outer electrode outside the plastic container and along the body of the plastic container, interposing the insulator or resistive or capacitive elements

between the first outer electrode and the second outer electrode,

disposing an inner electrode inside the plastic container, ~~degassing~~ creating a vacuum inside the plastic container, then feeding a raw material gas of a carbon source into the plastic container, and applying a voltage between the first and second outer electrodes and the inner electrode thereby to generate plasma to form a DLC film on the inner surface of the plastic container by providing a high-frequency electric power to the first outer electrode.

8. (currently amended) The method for producing DLC film-coated plastic containers as claimed in claim 7, wherein ~~a higher power is applied to the first outer electrode than to the second outer electrode~~ lower power is applied to the second outer electrode than to the first outer electrode by capacitive coupling.

9. (currently amended) A method for producing DLC film-coated plastic containers, which comprises disposing a first outer electrode outside a plastic container and along the bottom portion of the plastic container, disposing a second outer electrode outside the plastic container and along the body of the plastic container, disposing a third outer electrode outside the plastic container and along the shoulder of the plastic container, interposing the insulator or resistive or capacitive elements between the first outer electrode and the second outer electrode, disposing an inner electrode inside the plastic container, ~~degassing~~ creating a vacuum in the plastic container, then feeding a raw material gas of a carbon source into the plastic container, and applying a voltage between the first, second and third outer electrodes and the inner electrode thereby to generate plasma to form a DLC film on the inner surface of the plastic container by providing a high-frequency electric power to the first outer electrode.

10. (currently amended) A method for producing DLC film-coated plastic containers, which comprises disposing a first outer

electrode outside a plastic container and along the bottom of the plastic container, disposing a second outer electrode outside the plastic container and above the first outer electrode, disposing at least two additional outer electrodes outside the plastic container and above the second outer electrode, interposing the insulator or resistive or capacitive elements between the first outer electrode and the second outer electrode, disposing an inner electrode inside the plastic container, ~~degassing~~ creating a vacuum in the plastic container, then feeding a raw material gas of a carbon source into the plastic container, and applying a voltage between the first and second outer electrodes combined with at least two other outer electrodes above the second outer electrode, and the inner electrode thereby to generate plasma to form a DLC film on the inner surface of the plastic container by providing a high frequency electric power to the first outer electrode.

11. (currently amended) The method for producing DLC film-coated plastic containers as claimed in claim 9 or 10, wherein lower power is applied to the outer electrode other than the first outer electrode ~~a higher power is applied to the first outer electrode than to the second outer electrode.~~

12. (canceled)

13. (canceled)

14. (canceled)

15. (currently amended) ~~The~~ A DLC film ~~as claimed in claim 12, 13 or 14,~~ formed on the surface of a plastic molded article said DLC film having a thickness of from 50 to 400Å, a hydrogen content of from 39 to 52 atomic percent and ~~which~~ has a density of from ~~1.2 to 2.3~~ 1.22 to 1.59g/cm³.

16. (canceled)

17. (canceled)

18. (canceled)

19. (currently amended) ~~The~~ A DLC film-coated plastic container as claimed in claim 12, 13 or 14, having a DLC film on an inner surface, wherein the DLC film has a thickness of from 50 to 400Å, a hydrogen content of from 39 to 52 atomic percent and ~~has~~ a density of from 1.22 to 1.59g/cm³.

20. (new) The apparatus for producing DLC film-coated plastic containers as claimed in claim 1, wherein the high-frequency electric power is imparted to the second outer electrode by capacitive coupling.

21. (new) The apparatus for producing DLC film-coated plastic containers as claimed in claim 3, 4 or 5, wherein the high-frequency electric power is imparted to the outer electrode other than the first outer electrode by capacitive coupling.

22. (new) The apparatus for producing DLC film-coated plastic containers as claimed in claim 1, 3, 4, 5 or 20, wherein the insulator or, resistive or capacitive elements are formed to have a thickness through which the high-frequency electric power can be imparted to the outer electrode other than the first outer electrode by capacitive coupling.

23. (new) The method for producing DLC film-coated plastic containers as claimed in claim 7, 8, 9 or 10, wherein it is possible to impart the high-frequency electric power requires for each corresponding part of the container by capacitive coupling.

24. (new) The DLC film-coated plastic containers having a DLC film all over the inner surface, wherein the DLC film formed on the inner surface of the bottom of the plastic container has a thickness of from 50 to 400Å, a hydrogen content of from 39 to 52 atomic percent and a density of from 1.22 to 1.59 g/cm³.

25. (new A plastic molding of which the DLC film is formed on the surface, having a thickness of from 50 to 400Å, a hydrogen content of from 39 to 52 atomic % and a density of from 1.22 to 1.59 g/cm³.

26. (new) The plastic molding as claimed in claim 25 which is formed by integral molding.

27. (new) The plastic container as claimed in claims 19 or 24 which is formed by integral molding.